



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/856,339 | 08/15/2001 | Luet Lok Wong | P02196USO | 7723 |
| 26271 | 7590 | 04/20/2004 | EXAMINER | |
| FULBRIGHT & JAWORSKI, LLP 1301 MCKINNEY SUITE 5100 HOUSTON, TX 77010-3095 | | | PAK, YONG D | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1652 | |

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/856,339 | WONG ET AL. | |
| | Examiner | Art Unit | |
| | Yong D Pak | 1652 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5 and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 22, 2004 has been entered.

The amendment filed on January 22, 2004, amending claims 1 and 22 and canceling claim 21, has been entered.

Claims 1-3, 5 and 22-24 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3, 5 and 22-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Without the recitation of the SEQ ID NO, it is unclear which residues are at position 96, 87, 185, 247 or 395. The claims have been interpreted using SEQ ID NO:1 as the reference sequence. Even though applicants have inserted a specific SEQ ID

NO in part (a) and (b) of claim 1, claim 1 (c) and claims 2-5 and 22-24 are still drawn to mutants having mutations at positions not referenced by a SEQ ID NO.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 5 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al.

Wong et al. (UK Patent Application GB 2 294 692 A, UK Patent Application GB 2 306 485 A or U.S. Patent No. 6,117,661) teach a method of various substrates, including monoterpenes. Wong et al. also teach that the mutant P450 enzyme can

Art Unit: 1652

oxidize a wide range of organic substrates, including isoprenes or compounds containing isoprene building blocks such as terpenes, monoterpenes, triterpenes, sesquiterpenes etc. It would have been obvious to one of ordinary skill in the art to apply the method of Wong et al. to various classes of terpenes, such as sesquiterpenes. The substrates in claims 1-3, 5 and 22-24 are well know and readily available.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to oxidize sesquiterpenes and other substrates with the mutant P450 enzyme of Wong et al. The motivation of applying the method of Wong et al. to the various sesquiterpenes and other isoprenoids is to efficiently oxidize the said substrates. One of ordinary skill in the art would have had a reasonable expectation of success since Wong et al. successfully oxidized terpenes and teaches that the method can be applied to a wide class of organic compounds.

Claims 1-3, 5 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flitsch et al.

Flitsch et al. (U.S. Patent No. 6,100,074 teach a method of various substrates, including monoterpenes. Wong et al. also teach that the mutant P450 enzyme can oxidize a wide range of organic substrates, including isoprenes or compounds containing isoprene building blocks such as terpenes, monoterpenes, triterpenes, sesquiterpenes etc. It would have been obvious to one of ordinary skill in the art to apply the method of Wong et al. to various classes of terpenes, such as sesquiterpenes. The substrates in claims 1-3, 5 and 22-24 are well know and readily available.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to oxidize sesquiterpenes and other substrates with the mutant P450 enzyme of Wong et al. The motivation of applying the method of Wong et al. to the various sesquiterpenes is to efficiently oxidize said substrates. One of ordinary skill in the art would have had a reasonable expectation of success since Wong et al. successfully oxidized terpenes and teaches that the method can be applied to a wide class of organic compounds.

Response to Arguments

Applicant's arguments filed on January 22, 2004 have been fully considered but they are not persuasive.

Applicants argue that a skilled person in the art would not have been motivated to apply the mutant enzymes of Wong et al. (Wong et al. (UK Patent Application GB 2 294 692 A, UK Patent Application GB 2 306 485 A or U.S. Patent No. 6,117,661) or Flitsch et al. (U.S. Patent No. 6,100,074) to oxidize the substrates of the instant invention because the references do not give any teaching that the mutant P450 enzymes would oxidize sesquiterpenes, limonene or pinene. The examiner disagrees. While it is true that the cited references do not teach explicitly that the mutant P450 enzymes oxidize sesquiterpenes, a skilled artisan would have been motivated to oxidize other substrates, like sesquiterpenes since the mutant P450 enzymes oxidized monoterpenes and isoprenes. Therefore, it would have been obvious to a skilled artisan to apply the teachings of Wong et al. and Flitsch et al. to other terpenes.


No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yong Pak whose telephone number is 571-272-0935. The examiner can normally be reached 6:30 A.M. to 5:00 P.M. Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on 571-272-0928. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.

Yong D. Pak
Patent Examiner



PONNATHAPU ACHUTAMURTHY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600